

In re Application of Rajarajan et al.
Serial No. 09/742,761

REMARKS

The Office action has been carefully considered. Claims 1-5, 7-10, 15-16, 22-26, 31, 35-39, 41, 43-49, and 51 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Quatrani, "Visual Modeling with Rational Rose and UML", Addison-Wesley, 3rd Printing, April, 1998 ("Quatrani") in view of U.S. Patent No. 5,838,973 to Carpenter-Smith et al. ("Carpenter-Smith"). Claims 6, 40, and 50 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Quatrani in view of U.S. Patent No. 6,542,595 to Hemzai et al. ("Hemzai"). Claims 11-14, 20-21, 27-30, 33, and 34 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Quatrani in view of U.S. Patent No. 5,958,012 to Battat et al. ("Battat"). Claim 17 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Quatrani in view of Carpenter-Smith and in further view of U.S. Patent No. 6,041,143 to Chui et al. ("Chui"). Claims 18 and 32 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Quatrani in view of Carpenter-Smith and in further view of U.S. Patent No. 6,353,448 to Scarborough et al. ("Scarborough"). Claim 19 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Quatrani in view of Carpenter-Smith and in further view of U.S. Patent No. 5,907,704 to Gudmundson et al. ("Gudmundson"). Claim 42 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Quatrani in view of Carpenter-Smith and in further view of U.S. Patent No. 6,430,538 Bacon et al. ("Bacon"). Applicants respectfully disagree.

Applicants thank the Examiner for the interview held (by telephone) on August 17, 2005. During the interview, the Examiner and applicants' attorney

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discussed the claims with respect to the prior art. The essence of applicants' position is incorporated in the remarks below.

Prior to discussing reasons why applicants believe that the claims in this application are clearly allowable in view of the teachings of the cited and applied references, a brief description of the present invention is presented.

The present invention is directed, generally, to providing a method and system that logically separates the notation (e.g., visual representation such as an icon, image or shape, e.g., circle, a triangle or a line) of a model element object, from the semantics of that notation, (e.g., what the notation represents or means in its current environment). The present invention, implemented in a Visual Modeling Framework (VMF), separates these two logical concepts into separate code components, whereby various notations and semantics from different providers may be combined. VMF defines the API set/interfaces to which pluggable semantic and notation objects conform, and allows a notation and a semantic to be plugged into or otherwise associated with each other to create a model element, thereby allowing pluggable notations. VMF also allows pluggable semantics, e.g., to enable UML notations to be used to design a complex software diagram, yet switch between 'Semantic' objects for Visual Basic and 'Semantic' objects in C++.

Note that the above description is for example and informational purposes only, and should not be used to interpret the claims, which are discussed below.

Turning to the claims, independent claim 1 recites a computer-readable medium having computer-executable instructions, comprising providing a plurality of notations, each notation comprising a visual representation of a model element,

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providing a plurality of semantics, each semantic comprising a meaning in a modeling environment of a model element, and associating a selected notation with a selected semantic to provide a model element having a visual representation and a meaning in a modeling environment.

The Office action rejected claim 1 as being unpatentable over Quatrani in view of Carpenter-Smith. More specifically, the Office action contends that Quatrani teaches providing a plurality of notations, each notation comprising a visual representation of a model element. Pages 77-78 and Figs. 6-1 and 6-2 of Quatrani are referenced. Further, the Office action contends that Quatrani teaches providing a plurality of semantics, each semantic comprising a meaning in a modeling environment of a model element. Again, pages 77-78 and Figs. 6-1 and 6-2 of Quatrani are referenced. Further, the Office action contends that Quatrani teaches associating a selected notation with a selected semantic to provide a model element having a visual representation and a meaning in a modeling environment. Once again, pages 77-78 and Figs. 6-1 and 6-2 of Quatrani are referenced.

Despite contending in one allegation that Quatrani teaches each recitation in claim 1, the Office action actually acknowledges elsewhere that Quatrani fails to teach claim 1. Instead, the Office action contends that Carpenter-Smith teaches the concept of separating notations from semantics. The Office concludes that it would have been obvious to a person skilled in the art at the time of the invention was made to have combined the teachings of Quatrani with the teachings of

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Carpenter-Smith because separating notations from semantics would allow users to model in three-dimensional space. Applicants respectfully disagree.

To establish *prima facie* obviousness of a claimed invention, all of the claim recitations must be taught or suggested by the prior art; (*In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)), and "all words in a claim must be considered in judging the patentability of that claim against the prior art;" (*In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970)). Further, if prior art, in any material respect teaches away from the claimed invention, the art cannot be used to support an obviousness rejection. *In re Geisler*, 116 F.3d 1465, 1471, 43 USPQ2d 1362, 1366 (Fed Cir. 1997). Moreover, if a modification would render a reference unsatisfactory for its intended purpose, the suggested modification / combination is impermissible. See MPEP § 2143.01.

Applicants submit that the Office action has failed to establish a *prima facie* case for obviousness. The Office action acknowledges that Quatrani does not distinguish semantics from notations. In fact, Quatrani defines a notation as "providing semantics that are rich enough to capture all important strategic and tactical decisions." Quatrani, Chapter 1, pg 4. In Quatrani, semantics are an integral component of notations. Quatrani, Chapter 1, pg 4. Significantly, Quatrani does not disclose separately providing semantics independent of notations as recited by applicants. Nor does Quatrani disclose or suggest a semantic data structure independent of a notation data structure. Rather, Quatrani is directed to utilizing notations including semantics. Quatrani teaches directly away from this aspect of the present invention, and simply cannot be interpreted to teach, on the

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one hand, semantics as part of a notation, and then be turned right around as an example or art that one could obviously separate the two. Such manipulation of the core concept of the teachings of Quatrani is beyond reasonable, let alone obvious to a skilled artisan.

Furthermore, Carpenter-Smith is being put forth as an example of art wherein the separation of notations from semantics is desired. This is not understood since the terms "notation" or "semantics" (or equivalent terms) do not appear anywhere in the entire reference of Carpenter-Smith. Despite this, the Office action broadly concludes that there exists motivation to combine the teachings of Quatrani with the teachings of Carpenter-Smith because separating notations from semantics would allow users to model in three-dimensional space. Applicants point out that Quatrani could already model in three-dimensional space and that being able to do so has nothing to do with the problem solved by the invention as recited in claim 1.

Such broad, conclusory statements do not come close to adequately addressing the issue of motivation to combine, are not evidence of obviousness, and therefore are improper as a matter of law. *In re Dembiczak*, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999). Further, if anything, the references teach away from such a combination. Quatrani teaches away from the use of separately providing semantics independent of notations as Quatrani discloses semantics are an integral component of notations. The use of separately providing semantics independent of notations is far different from using notations including semantics.

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As such, Quatrani and Carpenter-Smith, whether considered alone or in any permissible combination with other or any other prior art of record, fail to teach or suggest the recitations of claim 1. For at least the foregoing reasons, applicants submit that claim 1 is allowable over the prior art of record.

Applicants respectfully submit that dependent claims 2-36, by similar analysis, are allowable. Each of these claims depends either directly or indirectly from claim 1 and consequently includes the recitations of independent claim 1. As discussed above, Quatrani and Carpenter-Smith, whether considered alone or in any permissible combination with other or any other prior art of record, fails to teach or suggest the recitations of claim 1 and therefore these claims are also allowable over the prior art of record. In addition to the recitations of claim 1 noted above, each of these dependent claims includes additional patentable elements.

Turning to the next independent claim, claim 37 recites a system, comprising a notation comprising a representation of a model element in at least one modeling environment, the notation including an interface configured to provide access to methods therein, a semantic comprising a meaning of a model element in at least one modeling environment, the semantic including an interface configured to provide access to methods therein, and a paradigm server, the server connected to a modeling environment and configured to access the methods of the notation and the methods of the semantic via their respective interfaces, and further configured to enable a determination as to whether the paradigm server, notation and semantic are each compatible, and if they are compatible, to

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associate the notation with the semantic to provide a model element in the modeling environment.

The Office action rejected claim 37 as being unpatentable over Quatrani in view of Carpenter-Smith. More specifically, the Office action cited similar sections of Quatrani and Carpenter-Smith as were cited with respect to the rejection of claim 1. Applicants respectfully disagree.

As discussed above, to establish *prima facie* obviousness of a claimed invention, all of the claim recitations must be taught or suggested by the prior art; (*In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)), and "all words in a claim must be considered in judging the patentability of that claim against the prior art;" (*In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970)). Further, if prior art, in any material respect teaches away from the claimed invention, the art cannot be used to support an obviousness rejection. *In re Geisler*, 116 F.3d 1465, 1471, 43 USPQ2d 1362, 1366 (Fed Cir. 1997). Moreover, if a modification would render a reference unsatisfactory for its intended purpose, the suggested modification / combination is impermissible. See MPEP § 2143.01.

Applicants submit that the Office action has failed to establish a *prima facie* case for obviousness. As explained above, the Office action clearly acknowledges that Quatrani does not distinguish semantics from notations. In fact, Quatrani defines a notation as "providing semantics that are rich enough to capture all important strategic and tactical decisions." Quatrani, Chapter 1, pg 4. In Quatrani, semantics are an integral component of notations. Quatrani, Chapter 1, pg 4. Significantly, Quatrani does not disclose separately providing semantics

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independent of notations as recited by applicants. Nor does Quatrani disclose or suggest a semantic data structure independent of a notation data structure. Rather, Quatrani is directed to utilizing notations including semantics. Quatrani simply cannot be interpreted to teach, on the one hand, semantics as part of a notation, and then be turned right around as an example of art that one would obviously separate the two. Such manipulation of the core concept of the teachings of Quatrani is clearly improper and unreasonable, let alone obvious to a skilled artisan.

Furthermore, Carpenter-Smith is again set forth as an alleged example of art wherein the separation of notations from semantics is desired. This is not understood since the terms "notation" or "semantics" (or equivalent terms) do not appear anywhere in the entire reference of Carpenter-Smith. Despite this, the Office action broadly concludes that there exists motivation to combine the teachings of Quatrani with the teachings of Carpenter-Smith because separating notations from semantics would allow users to model in three-dimensional space. Applicants point out that Quatrani could already model in three-dimensional space and being able to do so has nothing to do with the problem solved by the invention as recited in claim 37.

Such broad, conclusory statements do not come close to adequately addressing the issue of motivation to combine, are not evidence of obviousness, and therefore are improper as a matter of law. *In re Dembiczak*, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999). Further, if anything, the references teach away from such a combination. Quatrani teaches away from the use of

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separately providing semantics independent of notations as Quatrani discloses semantics are an integral component of notations. The use of separately providing semantics independent of notations is far different from using notations including semantics.

As such, Quatrani and Carpenter-Smith, whether considered alone or in any permissible combination with other or any other prior art of record fails to teach or suggest the recitations of claim 37. For at least the foregoing reasons, applicants submit that claim 37 is allowable over the prior art of record.

Applicants respectfully submit that dependent claim 38, by similar analysis, is allowable. This claim depends directly from claim 37 and consequently includes the recitations of independent claim 37. As discussed above, Quatrani and Carpenter-Smith, whether considered alone or in any permissible combination with other or any other prior art of record, fail to teach or suggest the recitations of claim 37 and therefore these claims are also allowable over the prior art of record. In addition to the recitations of claim 37 noted above, claim 38 includes additional patentable elements.

Turning to the next independent claim, claim 39 recites a computer-implemented method, comprising selecting a selected notation from a plurality of notations, each notation comprising a visual representation of a model element, selecting a selected semantic from plurality of semantics, each semantic comprising a meaning in a modeling environment of a model element, and validating whether the selected notation can be associated with the selected semantic.

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The Office action rejected claim 39 as being unpatentable over Quatrani in view of Carpenter-Smith. More specifically, the Office action cited similar sections of Quatrani and Carpenter-Smith as were cited with respect to the rejection of claim 1. Applicants respectfully disagree.

Applicants submit that the Office action has failed to establish a *prima facie* case for obviousness. The Office action acknowledges that Quatrani does not distinguish semantics from notations. Such manipulation of the core concept of the teachings of Quatrani is clearly improper and unreasonable, let alone obvious to a skilled artisan.

Furthermore, Carpenter-Smith is being put forth as an alleged example of art wherein the separation of notations from semantics is desired. This is not understood since the terms "notation" or "semantics" (or equivalent terms) do not appear anywhere in the entire reference of Carpenter-Smith. Despite this, the Office action broadly concludes that there exists motivation to combine the teachings of Quatrani with the teachings of Carpenter-Smith because separating notations from semantics would allow users to model in three-dimensional space. Such broad, conclusory statements do not come close to adequately addressing the issue of motivation to combine, are not evidence of obviousness, and therefore are improper as a matter of law. *In re Dembiczak*, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999). Further, if anything, the references teach away from such a combination. Quatrani teaches away from the use of separately providing semantics independent of notations as Quatrani discloses semantics are an integral component of notations.

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As such, Quatrani and Carpenter-Smith, whether considered alone or in any permissible combination with other or any other prior art of record fails to teach or suggest the recitations of claim 39. For at least the foregoing reasons, applicants submit that claim 39 is allowable over the prior art of record.

Applicants respectfully submit that dependent claims 40-44, by similar analysis, are allowable. Each of these claims depends either directly or indirectly from claim 39 and consequently includes the recitations of independent claim 39. As discussed above, Quatrani and Carpenter-Smith, whether considered alone or in any permissible combination with other or any other prior art of record, fail to teach or suggest the recitations of claim 39 and therefore these claims are also allowable over the prior art of record. In addition to the recitations of claim 39 noted above, each of these dependent claims includes additional patentable elements.

Turning to the next independent claim, claim 45 recites a computer-readable medium having computer-executable instructions, comprising providing a plurality of notations from at least a first provider, each notation comprising a visual representation of a model element, providing a plurality of semantics from at least a second provider, each semantic comprising a meaning in a modeling environment of a model element, and associating a selected notation from the at least first provider with a selected semantic from the at least second provider to provide a model element having a visual representation and a meaning in a modeling environment.

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The Office action rejected claim 45 as being unpatentable over Quatrani in view of Carpenter-Smith. More specifically, the Office action cited similar sections of Quatrani and Carpenter-Smith as were cited with respect to the rejection of claim 1. Applicants respectfully disagree for at least reasons similar to those explained above.

Applicants submit that the Office action has failed to establish a *prima facie* case for obviousness. The Office action acknowledges that Quatrani does not distinguish semantics from notations. Therefore, reversing the very teachings of Quatrani is highly unreasonable.

Furthermore, Carpenter-Smith is again being put forth as an alleged example of art wherein the separation of notations from semantics is desired. This is not understood since the terms "notation" or "semantics" (or equivalent terms) do not appear anywhere in the entire reference of Carpenter-Smith. Despite this, the Office action broadly concludes that there exists motivation to combine the teachings of Quatrani with the teachings of Carpenter-Smith because separating notations from semantics would allow users to model in three-dimensional space. Such broad, conclusory statements do not come close to adequately addressing the issue of motivation to combine, are not evidence of obviousness, and therefore are improper as a matter of law. Further, if anything, the references teach away from such a combination. Quatrani teaches away from the use of separately providing semantics independent of notations as Quatrani discloses semantics are an integral component of notations.

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As such, Quatrani and Carpenter-Smith, whether considered alone or in any permissible combination with other or any other prior art of record, fail to teach or suggest the recitations of claim 45. For at least the foregoing reasons, applicants submit that claim 45 is allowable over the prior art of record.

Applicants respectfully submit that dependent claims 46-47, by similar analysis, are allowable. Each of these claims depends either directly or indirectly from claim 45 and consequently includes the recitations of independent claim 45. As discussed above, Quatrani and Carpenter-Smith, whether considered alone or in any permissible combination with other or any other prior art of record, fail to teach or suggest the recitations of claim 45 and therefore these claims are also allowable over the prior art of record. In addition to the recitations of claim 45 noted above, each of these dependent claims includes additional patentable elements.

Turning to the last independent claim, claim 48 recites a computer-readable medium having stored thereon a plurality of data structures, comprising a notation data structure from at least a first provider having a set of at least one interface for accessing a plurality of methods therein and a semantic data structure from at least a second provider having a set of at least one interface for accessing a plurality of methods therein, the semantic data structure from the at least second provider being associated with the notation data structure from the at least first provider to provide a model element.

The Office action similarly rejected claim 48 as being unpatentable over Quatrani in view of Carpenter-Smith. More specifically, the Office action cited

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similar sections of Quatrani and Carpenter-Smith as were cited with respect to the rejection of claim 1. Applicants respectfully disagree.

Again, the Office action has failed to establish a *prima facie* case for obviousness as the Office action concedes that Quatrani does not distinguish semantics from notations, and the allegation with respect to Carpenter-Smith that the separation of notations from semantics is desired is not sustainable, as the terms "notation" or "semantics" (or equivalent terms) do not appear anywhere in the entire reference of Carpenter-Smith. Despite this, the Office action broadly concludes that there exists motivation to combine the teachings of Quatrani with the teachings of Carpenter-Smith because separating notations from semantics would allow users to model in three-dimensional space. Such broad, conclusory statements do not come close to adequately addressing the issue of motivation to combine, are not evidence of obviousness, and therefore are improper as a matter of law. Further, if anything, the references teach away from such a combination. Quatrani teaches away from the use of separately providing semantics independent of notations as Quatrani discloses semantics are an integral component of notations.

As such, Quatrani and Carpenter-Smith, whether considered alone or in any permissible combination with other or any other prior art of record, fail to teach or suggest the recitations of claim 48. For at least the foregoing reasons, applicants submit that claim 48 is allowable over the prior art of record.

Applicants respectfully submit that dependent claims 49-51, by similar analysis, are allowable. Each of these claims depends either directly or indirectly

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from claim 48 and consequently includes the recitations of independent claim 48. As discussed above, Quatrani and Carpenter-Smith, whether considered alone or in any permissible combination with other or any other prior art of record, fail to teach or suggest the recitations of claim 48 and therefore these claims are also allowable over the prior art of record. In addition to the recitations of claim 48 noted above, each of these dependent claims includes additional patentable elements.

For at least these reasons, applicants submit that all the claims are patentable over the prior art of record. Reconsideration and withdrawal of the rejections in the Office action is respectfully requested and early allowance of this application is earnestly solicited.

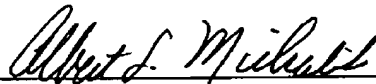
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CONCLUSION

In view of the foregoing remarks, it is respectfully submitted that claims 1-51 are patentable over the prior art of record, and that the application is in good and proper form for allowance. A favorable action on the part of the Examiner is earnestly solicited.

If in the opinion of the Examiner a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney at (425) 836-3030.

Respectfully submitted,



Albert S. Michalik, Reg. No. 37,395
Attorney for Applicants
Law Offices of Albert S. Michalik, PLLC
704 - 228th Avenue NE, Suite 193
Sammamish, WA 98074
(425) 836-3030
(425) 836-8957 (facsimile)

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CERTIFICATE OF FACSIMILE TRANSMISSION

I hereby certify that this Response, along with transmittal, Petition for Extension of Time, Credit Card Payment Form and facsimile cover sheet, are being transmitted by facsimile to the United States Patent and Trademark Office in accordance with 37 C.F.R. 1.6(d) on the date shown below:

Date: September 28, 2005


Albert S. Michalik

2650 Response